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ABSTRACT

Of 25 western countries under consideration in 1975, Canada had the worst accident record for female children and the second worst for male children. In response to this problem, the present report assembles data to present a clearer picture of the extent of the problem and begins an analysis of potential accident events as a preliminary step to formulating plans for preventive action. The view is expressed that current prevention strategies have not been applied properly, consistently, or to their full extent. Responsibilities for effective intervention are discussed, including safety training for children at home, parental and community responsibilities, and responsibilities of regulatory and consumer protection organizations. Concluding remarks point out that other industrialized countries have achieved notable success in solving problems of child safety and suggest that Canadians appropriate safety technology and evaluate safety regulations. (RH)

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ENVIRONMENTAL SAFETY AND THE PREVENTION OF CHILDHOOD ACCIDENTS

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Canada is a country in the forefront of the western industrialized world, yet it has an abysmal record for childhood accidents. In 1975, Canada had the worst accident record for female children-43% of all deaths. The Canadian record for boys was worse, 54.8% of all deaths, and it's no cause for pride that we were not the worst, but only second worst of the 25 western countries compared. In 1977, 67.5% of all deaths to children aged 1-19 years were attributable to some external cause of injury and of these, some 50% died in motor vehicle accidents. Accidents are the primary single cause of child deaths and such deaths far outrank deaths by all forms of disease.

Fatalities are only the tip of the iceberg. For every fatal accident, estimates show that between 200 and 900 children are admitted to hospital. In 1977, approximately 1,420 children died and 110,000 children under the age of 19 required hospital care for conditions relating to accidents, violence or poisonings. The consequences can be long term. For every fatal accident, between 1 and 4 handicaps result.

Is accident proneness a special Canadian attribute? And are we destined to wage futile war on accidents as a consequence? To start with, one must be clear what an accident is. Though there is no doubt whatsoever regarding the result of an accident, the popular definition of the word is limited and even misleading. The distinguishing characteristics as stated in any dictionary definition are these: a sudden unexpected event resulting in loss or injury without apparent or known cause; an unexpected, unintentional act, occurring by chance, in an unpredictable random manner; also an unfortunate event resulting from carelessness, ignorance or a combination of causes.

To start with, Canadians must realize not all accidents are sudden, unpredictable or without apparent cause and therefore unpreventable. For example, environmental pollutants which are lethal may work slowly, building up dangerous levels of poisonous substances in the body, resulting in disease or fatalities. Children breathe in more air per unit body weight than adults, and they are often more exposed because many pollutants are heavy and settle near the ground. Yet, it is not unusual to find family housing projects exposed to industrial emissions, or parking areas near bedroom windows. Nor are accidents always unexpected resulting from unintentional acts: children fall from low windows - and have been doing so for years.

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What are the major kinds of accidents that Canadian children fall victim to, and where do they occur? The home is often considered a safe haven and a refuge, yet more accidents happen in and around the home than in any other place. Nothing is more dangerous than a cherished illusion.

Though gross data are available on fatalities, it is difficult to find data regarding details of accidental death, the actual location or even the accidental agent. Accidents are the leading cause of fatalities among the 1-4 age group, not including those caused by motor vehicle accidents, which rank second. Children under the age of 4 are particularly vulnerable to accidents in the home.

Table 1

ACCIDENT FATALITIES OCCURRING IN HOMES BY AGE GROUPS, CANADA 1978

	Age Groups	
	0-4	5-14
Falls	13	5
Drowning	30	6
Fire	79	83
Poisoning	6	3
Suffocation	48	15
TOTAL	176	112

A clearer picture of the extent of the problem emerges from data collected on home accident-related in-patient cases recorded in Quebec hospitals. These figures do not include fatalities, emergency room statistics or unreported cases. (Table 2)

Table 2

HOME ACCIDENTS - PROVINCE OF QUEBEC, 1979
NUMBER OF ACCIDENTS BY TYPE AND AGE GROUPS*

Type of Accident	Age Groups		
	0-4 Years	5-9 Years	10-14 Years
Falls	947	492	366
Burns/Scalds	248	67	99
Electrical Appliances	2	-	1
Poison	461	36	48
Cuts and Bruises	323	177	193
Other	400	234	268
Total	2,381	1,006	975
Total number of children 1976**	442,660	485,615	622,070

* Data from number of in-patient cases recorded in Quebec hospitals does not include emergency room statistics or unreported cases.

** Census, 1976.

Very little detailed data are available regarding the specific locations in the home where children's accidents occur. A British study indicates that one half of the accidents involving pre-schoolers occur in the kitchen, living and dining rooms, and about 10% in the stairs (Table 3).

Table 3

HOME ACCIDENTS BY LOCATION OF ACCIDENT

Locations	Age groups	
	0-4 Years	5-14 Years
	%	%
Kitchen	19.8	16.6
Living/Dining room	36.0	23.3
Outside	14.2	27.5
Stairs	9.6	11.1
Bedroom	10.9	9.9
Bathroom/Toilet	3.4	3.6
Hall	3.4	4.8
Garage	0.6	1.0
Other	2.1	2.2
Total	100.0	100.0

From a survey of domestic accidents in 6 selected areas conducted by the UK Home Office and Institute of Consumer Ergonomics, 1974. Data from Accident and Emergency Departments of hospitals.

Among children 5-14 years of age 25% fall victim to accidents in the immediate vicinity of the home. Many of these are traffic accidents where the child is hit on his journey from or to school or while playing. For this age group, traffic accidents are the leading cause of death. There is some evidence to support the fact that 60% of these accidents occur within a 400 m (2 block) radius from the child's home and a shocking 25% right on the street in front of their home. Some evidence also indicates that child pedestrian accidents do not occur in areas of high speed traffic but in slow or disorganized traffic such as in parking lots and service roads. Child pedestrian accidents seem to peak around the age of 9, just when parents loosen the apron strings and the child is trying out his new found independence.

It is disheartening to note how slowly accident rates are declining. Other countries have had much greater success.

Table 4

ACCIDENT FATALITIES FOR CHILDREN UNDER 15 YEARS, SELECTED CAUSES

	1974		1975		1976		1977		1978	
Cause	No.	% of Total Fatalities	No.	% of Total Fatalities	No.	% of Total Fatalities	No.	% of Total Fatalities	No.	% of Total Fatalities
Traffic	867	48.6	630	42.5	546	42.2	541	44.4	545	44.2
Falls	48	2.7	66	4.5	48	3.7	49	4.0	38	3.1
Suffocation	214	12.0	182	12.3	149	11.5	143	11.7	121	9.8
Poisoning	33	1.9	27	1.8	22	1.7	19	1.6	18	1.5

Source: Canada Safety Council
Accident Fatalities in Canada, 1978, Ottawa.

Why do we have this depressing state of affairs in Canada? Are Canadian parents deficient in parenting skills? Are they particularly inresponsible? Are residential environments in Canada more dangerous than in other countries? Do Canadian designers ignore safety concerns? Are Canadian regulatory bodies oblivious to need for safety regulation? Canadians have a right to know. There is no evidence whatsoever to answer any of these questions affirmatively.

Then, why? It is true that most Canadians do not know that death by accident is the silent epidemic that kills more children than any other disease. They do not seem to realize that many accidents are preventable. Too much energy is wasted assigning blame for the problem. I have encountered consumer anger because they believe that government is negligent in its duties. When I approached government officials regarding changing window standards to prevent children falling out, some of them felt that the accident rate was high because parents were careless or, worse, had actually pushed their children out, and therefore there was no reason to tamper with window standards. Designers are just as anxious to keep their haloes untarnished. A much quoted British study found that the causes of domestic accidents were as follows:

Personal Factors	67%)	92%
Faulty Maintenance	25%)	
Faulty design	8%	

Personal factors are described in the following ways:

Mental: Children: curiosity, disobedience, temper, ignorance
Adults: worry, temper, haste, fatigue, muddle, carelessness, depression.

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Physical: Failing eyesight, hearing, impaired sense of smell, lack of sensation.
Physical disease, disablement, dizziness or faintness

To accept these factors as unnatural is to deny children their childhood and adults their humanity. People, unlike standardized robots, are not endowed with uniform physical characteristics nor can they be expected to perform at their peak. If you cannot be tired, drop your guard, and relax in your own home, where can you? Besides the inter-relatedness of these factors cannot be ignored. Fatigue can be induced by poor design, which may also invite faulty maintenance.

The first step in developing an effective plan of prevention is to admit that the problem exists, because the living environment and the impacts on humans in the industrialized world have changed. Rather than point an accusing finger, it is necessary to analyse the potential accident event in terms of its elements if we are to orchestrate an effective plan for preventive action.

Children: Young children are developing physically, intellectually, socially and emotionally. They have not perfected physical control of their growing bodies, nor have they learned to cope with their complex living environment. Their perceptive skills are not developed and their judgement is inexperienced. They are immature and incapable of interpreting danger. To date, there is no foolproof way of speeding up the process of socialization or maturation, you will agree.

Children are particularly vulnerable because they are extensive users of the home, its contents and the immediate surroundings due to their limited home range. Succumbing to their natural urge for exploration, children will put features of the environment to uses not found in the normal range of adult behaviour. They slide down banisters, climb fences and crawl into cupboards. Because they lack experience in predicting the result of an action, they can get into bad trouble. Take the little girl who stuck her eyelashes together with crazy glue, for example.

The Environment: The living environment is increasing in its complexity with many hidden risks and new hazards. Our once quiet streets are now choked with traffic. Our homes are full of technically advanced machines that pose dangers to children. We use many potent drugs and cleaning materials that are toxic. Did you know that the average household these days has as many as 250 poisons in bathrooms, under kitchen sinks, in purses, and in basements?

A British investigation showed the products that are most often associated with childhood accidents. (Table 5)

Table 5

PRODUCTS RELATED WITH HOME ACCIDENTS IN THE 0-4 AGE GROUP

Products	number of cases reported
Household furniture	412
Construction (stairs, windows)	213
Kitchen utensils (knives, kettles)	129
Cleaning products	89
Plants and trees	81
Play things and sports equipment	80
Household maintenance	76
Outside environment	71
Flammable and corrosive liquids	70
Household fixtures	68

From a survey of domestic accidents in 6 selected areas, conducted by the UK Home Office, and the Institute of Consumer Ergonomics, 1974.

Data does not include products which are not under the jurisdiction of the Department of Prices and Consumer Protection, such as drugs, food, drink and motor vehicles.

Conditions: The prevailing conditions of the accident equation may also be tied to the environment. Poor visibility, for instance, due to insufficient lighting or inappropriate landscaping may endanger a pedestrian.

The conditions are also closely tied to the human element. Accidents are likely to be avoided when supervision is possible or when family members are aware of potential danger. However, studies show that half to three fourths of the accidents of children occurred under conditions of supervision by a responsible adult. These days when one half of the mothers work, a caring adult may have several children under his/her care. It is also unrealistic to expect a constant state of alertness in the supervising adult, because the dangers in the environment have increased immeasurably.

Canadian strategies for childhood accident prevention must consist of a concerted effort by all sectors of the population: government departments, professionals and designers, service organizations related to children, community organizations, parents, consumers, and even children - no one can be exempt. Thus far, Canada has simply not mobilized the country to take proper action. Prevention strategies have not been applied properly, consistently or to their full extent. Strategies that are in place at the moment are obviously half-hearted, and do not receive committed professional or popular support.

What can we do that we are not doing now? Or what can we do better? Let us consider our responsibilities regarding each strategy.

1. Safety training for children at home: We cannot expect too much of our children. Safety training must be part of their learning process, but our expectations must not exceed their developing abilities. Children will learn safety rules but they cannot be expected to remember them when engrossed in play because their cognitive abilities do not allow them to evaluate several problems at once. Development also implies environmental know-how. The child must learn how to judge his own physical abilities, judge distances and speed by sight and sound, evaluate risks from environmental cues, and relate cause to effect in the process of developing survival techniques from childhood experiences. The child can be taught to look both ways before using a street, but he cannot make the complicated judgements necessary from the many environmental cues until he is mature enough to do so. The development of road sense takes time - from 10-14 years.

2. Parental responsibilities: Our homes with their many rooms and their dangerous contents are simply not conducive to parental supervision. An adult with more than one child to watch is overburdened, as it is humanly impossible to maintain a peak level of vigilance for each child.Still, a caring parent or adult can avert many accidents to which innately curious children can expose themselves. Parents need a supportive environment. Lacking this, parents must resort to accident proofing their homes, and using as many aids to promote safety as possible. Canadians have been particularly negligent on this score. Admittedly, some actions require less effort, less frequent action, and are therefore much easier to carry out than those that require consistent and persistent prevention behaviour. A water heater thermostat can be lowered to 54°C to minimize danger from scalding. Such a one-shot action is easier to do than to ensure that the child-proof top is replaced on a medicine bottle each time it is used. Accident proofing a home is not a simple matter because all pervasive danger lurks in the most innocuous things. A baby can inhale talcum powder when the container tips over, for instance. However, the parent can consciously search for gadgets (safety catches for drawers) that can be installed or develop preventive safety habits actions that can make a home safe.

   The other primary responsibility of the parent is safety training. Good and consistent safety habits displayed by adults will be emulated in time. Parents simply cannot have one set of rules for themselves and another for children. But too often we see a parent who tells the child to look both ways at a pedestrian crossing before he crosses the road, ten drags along a youngster as he jaywalks himself. Finally the harassed parents must remember that children are precisely that - children. They should not be given more responsibility for their safety than they can handle.

   The parent as a consumer also has a responsibility that he has shirked. The parent-consumer cannot deny the fact that he has supported poor design by purchasing it, by not demanding better design, by not protesting designs that compromised safety, and by not suing when justified. In other words, we watched silently, and let it happen. However, as non-professionals, parents look to designers, professionals, governmental regulatory bodies and consumer organization for support.

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3. Responsibilities of designers and professionals: The home environment the home and all its contents can be made safer by preventive design. Most designers and professionals are not irresponsible but when they are faced with constraints of cost or space, they may make trade-offs that may compromise safety. The resulting design poses a built-in danger exposing all users to risk. It portends an accident waiting to happen claiming the odd victim throughout its lifetime, while exacting a daily toll in terms of discomfort from every user. That an accident will occur is certain - the question is only when? And to whom?

Preventive design ensures that the home is as inherently safe as possible. Since safety is often an objective that is taken for granted it is often lost in the shuffle of other objectives such as aesthetic quality and cost-effectiveness. Design is often responsible for accidents that happen to residents using their homes in ways that seem reasonable to them, but were not foreseen by the designer. Infants put their heads through decorative railings for instance and are unable to withdraw them. A designer cannot assume that toddlers will receive unceasing supervision, or that the parent will resort to add-on protective devices that may be removed or may not work. Nor can the designer assume that all residents will be aware of danger and take steps to avoid accidents.

What can be done to ensure that preventive design is practised? Professional associations and licensing bodies must ensure a high code professional ethics. They must also ensure that safety concerns are included in professional training. At the moment, professional train often does not emphasize the safety aspects of design, nor does it promote an on-going interest in keeping up with new thinking regarding safety. Though there is a considerable body of literature on safety, ranging from detailed safety check lists to safety norms for product design, the homebuyer has no assurance that such material is consulted and applied.

The problem is further complicated by the fact that a very large proportion of family housing is designed by builders who have no professional training. A number of manufacturers design and sell products that are sold long before the society at large realizes the dangers that they pose.

4. Responsibilities of regulatory and consumer protection organizations: obtain a minimum standard of safety and to protect the consumer, governments resort to housing codes, residential standards and consumer safety regulations that are enforceable by law for the common good. While these are in place, they have not been as effective as they should be. These are intended to serve as the bottom line for design but it common for a designer to feel that compliance relieves them of further responsibility.

Such bodies need to re-examine the regulations periodically to upgrade them, but most are reluctant to make changes. Infractions are rarely reported. Even when action is taken, few convictions result.

Consumer protection agencies serve a vital function. However, our protective regulations enforced by such agencies are insufficient and inconsistent. For instance, child proof caps are required only for certain size of containers, while others do not require them. The onus is thus on the consumer.

Regulation has been shown, time and time again, to be the most effective tool in the arsenal of preventive measures. The introduction of car seat and child restraint regulations resulted in dramatic declines in child accidents in every country that has used it. Canada simply has not put this tool to full use.

New approaches to regulations must be resorted to, as more information becomes available. Restrictive regulations can stifle good design and mandatory requirements may result in stereotypical design solutions. The more recent performance based standards imply a code of professional ethics, that gives the responsible designer greater freedom. The development of regulations is an extremely difficult task. It is a thin line between restrictive regulation and safety promoting codes. Human ingenuity must be applied to resolve these problems, and to use the regulatory tool sensitively to enhance safety.

Consumer organizations must lobby for safety concerns and press for changes. This they have done with good effect. However, they must also aid the regulatory bodies by providing feedback on malfunctioning designs. They must also work to inform the public of the safety gadgets and the safety information available. They must look for means to implement periodic evaluations to update safety data. They must ensure that new developments in the safety field become immediately available to the practising professional.

5. Responsibilities of the collective (community or society as a whole): To mobilize the public, the truth about accidents to children must be made widely known. In addition to the trauma suffered by children and their families, accidents are a major health problem and pose a heavy economic burden on our communities.

How willing we are to participate in compaigns for MS, for CP and a host of other diseases! Should we not be willing to marshall our efforts to launch a giant campaign, in direct relationship in size to the threat it poses to our children, to eradicate accidents?

There are costs involved, to be sure. But how much greater are the costs to society when our most precious resource - children - is being destroyed by accidents. As Canadians we must be willing to invest to eliminate the costly waste of life.

We must invest in safety education and research to make our homes and communities safe in light of the burgeoning threats and dangers. Safety research must keep pace. Results must be quickly disseminated and applied.

We must encourage the search for new means of safety applications and new approaches to making dangerous but essential objects safe. For example, the entire volume of water in a domestic hot water tank must be heated to the highest temperature necessary in the home. However, appliances such as washers and dishwashers can be designed with temperature boosters that raise the water temperature to the optimum limit for their performance. The tank can then be kept at a lower temperature. This virtually eliminates the risk of scalding from tap water.

We must become a society that is eager to learn from the experience of other countries. A high death rate due to childhood accidents of a similar magnitude afflicted several countries of the industrialized world. They have applied considerable resources towards finding solutions, and have achieved some notable success. Canadians must be quick to appropriate such safety technology, and to evaluate safety regulations that have a proven success rate.

Child safety is everyone's responsibility. This array of preventive strategies will only work with your support. To protect Canadian children, every single one of us must make this commitment. Whenever faced with a decision that touches on safety, do not ask yourself if some hypothetical child, some time in the next fifty years, might be hurt, disabled or killed by the decision you make. Make the decision as if it is your own life that is at stake. For as the poet so aptly put it, "Any man's death diminishes me, because I am involved in mankind; and therefore never send to know for whom the bell tolls, it tolls for thee". (John Donne)

References

1. Anne S. Ackland. Home Safety Check List, Architect's Journal, 23 October, 1963, pp 839-840

2. Susan P. Baker. Childhood Injuries: The Community Approach to Prevention. Journal of Public Health Policy, September, 1981

3. Bégin, the Honourable Monique. Address at the First National Conference on Childhood Accidents and Prevention, Ottawa: April 14, 1981

4. Berfenstam, Ragnar. The work of the Swedish Joint Committee for Childhood Accident Prevention. (In 17)

5. Boucher, C.A. Accidents in the Home, Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service 14, 49-50 (1955)

6. Boucher C.A. The Medical Office of Health and Accidents in the Home. Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service 11:2-7 (1982)

7. Canada Mortgage and Housing Corporation. Safety in the Home, Ottawa: CMHC - NHA 5186 78/10

8. Canada Safety Council. Accident Fatalities in Canada (table), CSC, Ottawa: 1978

9. Canada Safety Council. Leading Non-Transport Accident Fatalities Occurring in Homes by Age Groups, Canada, 1978 (Table), CSC, Ottawa, 1978.

10. Children's Environments Advisory Service. Child Pedestrian Safety in Residential Environments, Ottawa: Canada Mortgage and Housing Corporation, CEAS Monograph, 1980

11. Children's Environments Advisory Service, La sécurité des enfants Vs la circulation - auto, Ottawa: Canada Mortgage and Housing Corporation, CEAS Research Report 16, 1980

12. Court, Donald, Conclusion, In (17).

13. Department of the Environment, Safety in the Home, London: HMSO, (UK) 1967

14. Haffey H. Causes of Injury, 1974, 1975, 1976, 1977, Hospital for sick Children, Toronto: 1978

15. International Children's Centre. Prevention of Child Accidents at Home, Paris, June: 1979

16. International Children's Centre. Prevention of Accidents in Childhood, Paris: June 1979

17. Jackson, R.H. (Ed.) Children, the Environment and Accidents, Tunbridge, UK: Pitman, 1977

18. Jackson, R.N. Setting the scene. (In 17)

19. Russam K. The Psychology of Children in Traffic. (In 17)

20. Safety in Domestic Buildings - 1. Building Research Station Digest, Number 43 (Second Series) (UK), 1966

21. Safety in Domestic Buildings - 2, Building Research Station Digest, Number 44 (Second Series) (UK), 1966

22. Sandels, Stina. Children in Traffic, Elek Books Limited, London: 1975

23. Sinnott, W.R. Safety Aspects of Domestic Architecture (In 17)

24. U.S. Department of Housing and Urban Development. A design Guide for Home Safety, Washington, D.C: Research and Technology Division, HUD, January 1972

25. Whittington, Claire, Accidents in the Home-Results of a Preliminary Study Carried out by the Home Office and the Institute for Consumer Ergonomics. (In 17)